



Koumbia – Burkina Faso

JECAM/GEOGLAM Science Meeting

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Stéphane DUPUY, Agnès BEGUE, Camille
JAHEL, Christian BARON, Jacques IMBERNON

SANOUE Patrice - ISESTEL Ouagadougou
VALL Eric - CIRDES, Bobodioulasso

Site Description

- 🇸🇩 Location: Burkina Faso
- 🇸🇩 Topography: flat
- 🇸🇩 Soils : Mostly sandy
- 🇸🇩 Drainage class/irrigation: No
- 🇸🇩 Crop calendar: June to Oct
- 🇸🇩 Field size: ≤ 3 ha
- 🇸🇩 Climate and weather: Tropical dry
- 🇸🇩 Agricultural methods used: rainfed crops





maize



cotton



sorghum



rice

Project Objectives



Crop identification and Crop Area Estimation

- Based on a combination of VHRSR image with HSR time series
- Analysis of trees density impact on classification results
- Potential of SAR data ?



Cropping system characterization

- Crop rotation
- Fallow mapping ?????



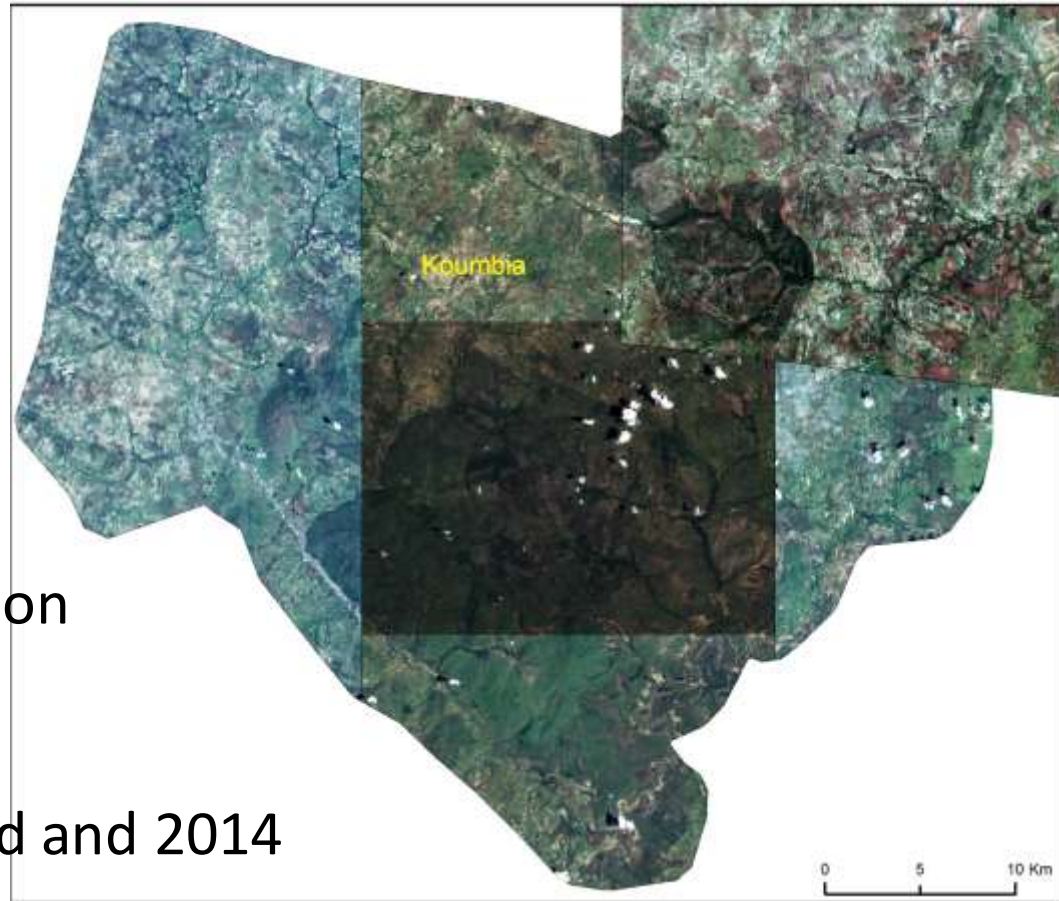
Yield Prediction and Forecasting

- Statistical approach
- SARRA-H modeling

Earth Observation Data Used

Pléiades

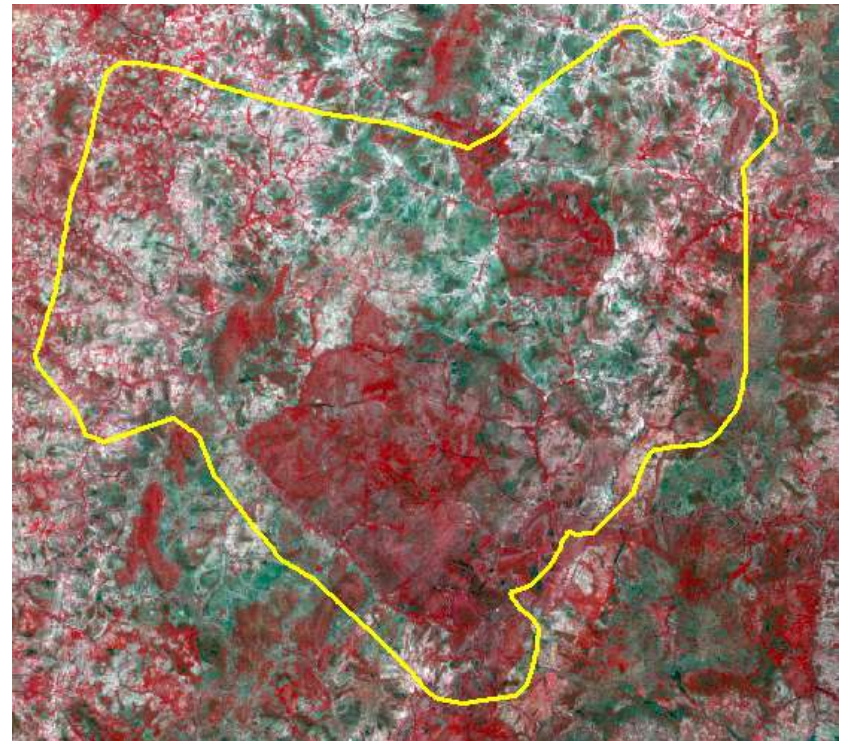
- Airbus DS
- Optical (1200 km²)
- Nber of scenes: 3
- Cloud-free acquisition challenge, cost
- 2012, 2013 acquired and 2014 planned (Pléiades or SPOT6)



Earth Observation Data Used

Landsat 8

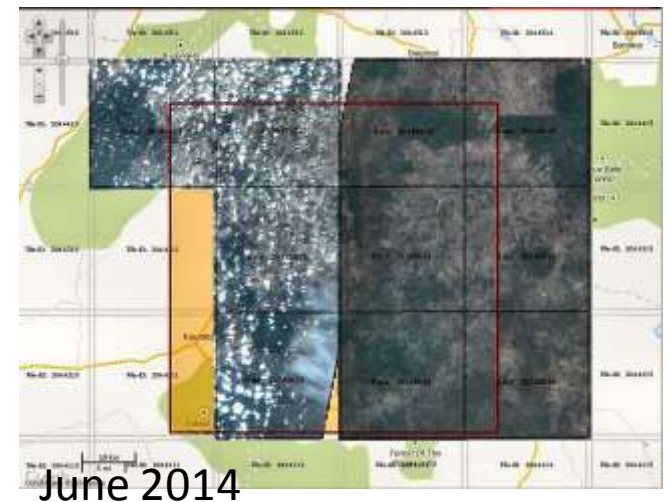
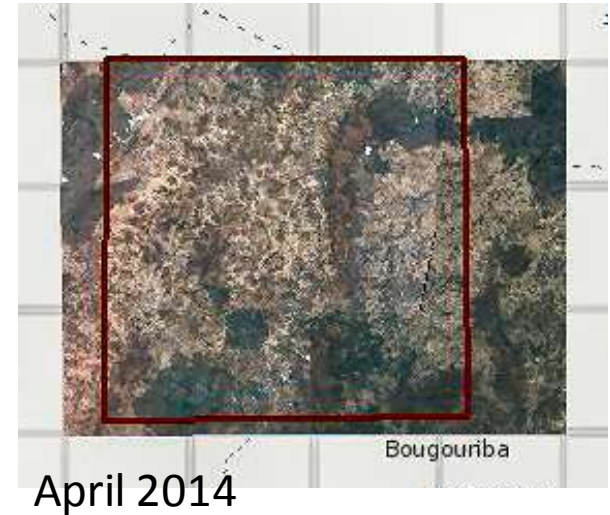
- USGS
- Optical
- Nber of scenes: 11
- Clouds



Earth Observation Data tasked

Rapid-Eye

- BlackBridge (JECAM)
- Optical
- 12 scenes : april + june + In progress
- Cloudiness



Earth Observation Data tasked

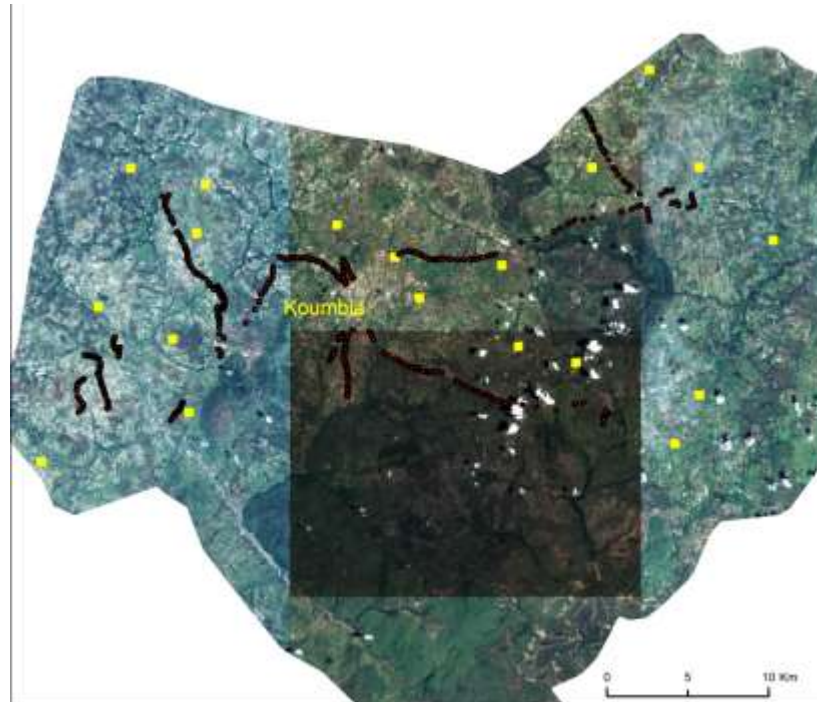
DEIMOS

- 2009, 2011, 2012 : 1 image (dec-january)
- Tasked 2014 : 12 images, from June to November

In situ Data

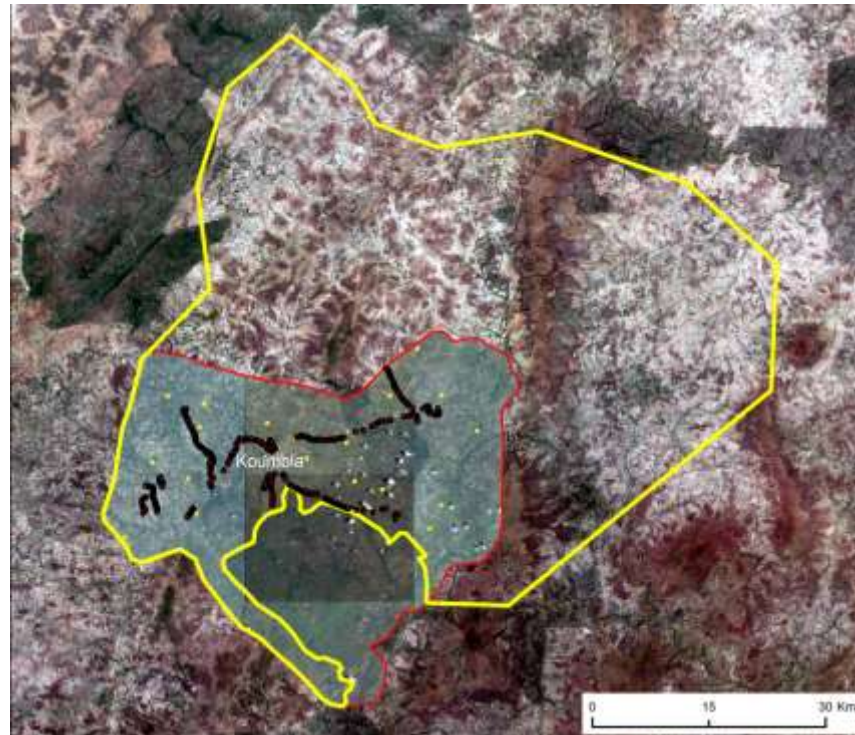
 Field surveys in 2012, 2013 and 2014 :

- GPS points :
 - Nov. 2012: 400 GPS waypoints / Oct. 2013 : 590 GPS waypoints
 - 4/5 crop – 1/5 non-crop+ Manual conversion of points to polygons
 - Oct. 2014 : Field data protocol to change to meet JECAM requirement
- 20 blocs of 25 ha, manually digitized






In situ Data


- 🇸🇩 Fields survey and yields measurements over a surface of 3900 km²
 - 2014 season
 - 6 villages with 30 fields by villages (180 fields)
 - 3 rain gauges by villages

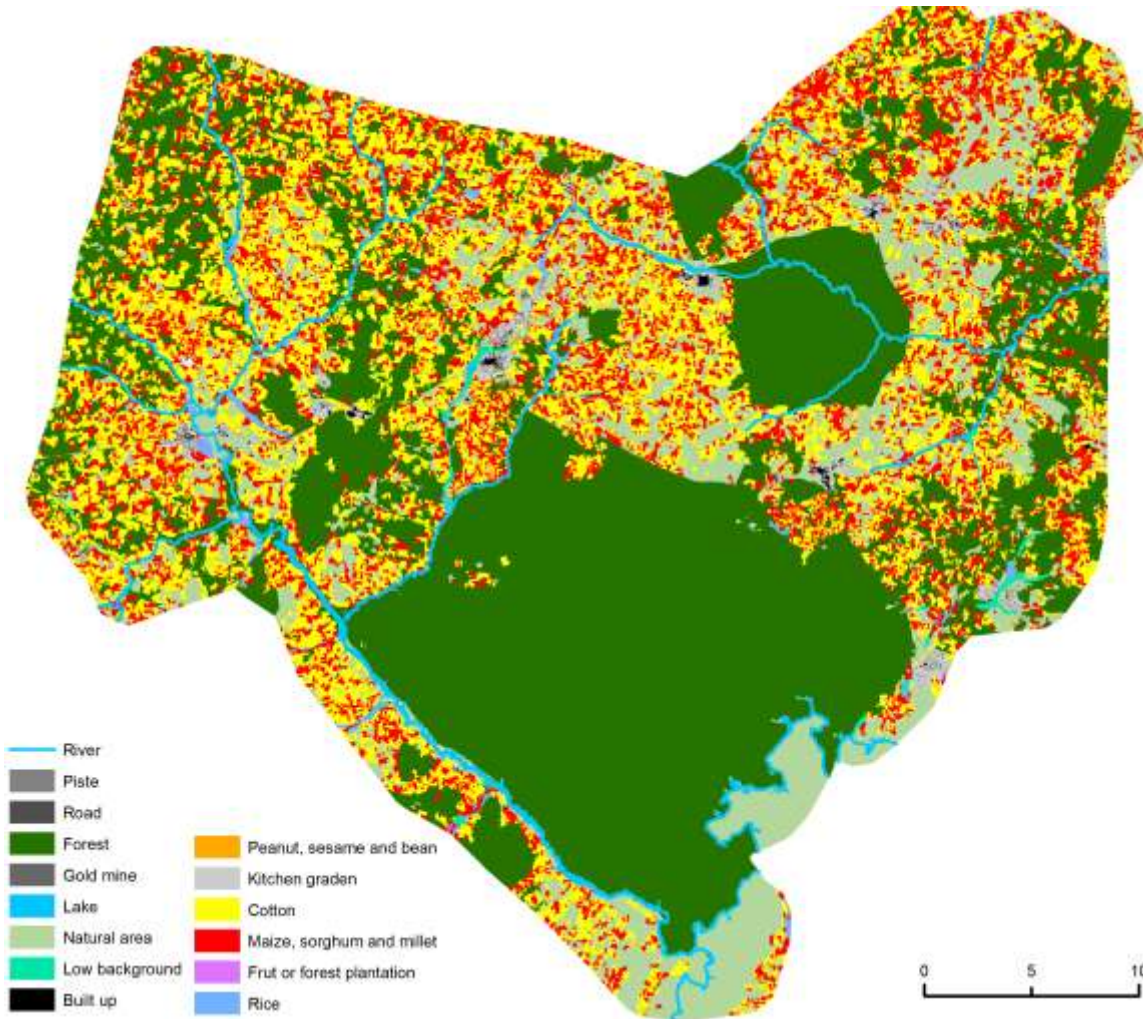


Collaboration

-  Collaboration with other CIRAD JECAM sites
-  SIGMA European Collaborative Project (FP7-ENV-2013 SIGMA — Stimulating Innovation for Global Monitoring of Agriculture and its Impact on the Environment in support of GEOGLAM — project no. 603719)
-  African partners:
 - Burkina : Bobo Dioulasso University
 - Niger : AGRHYMET

Results (1/1)

 Land cover map in 2012 (photo-interpretation)



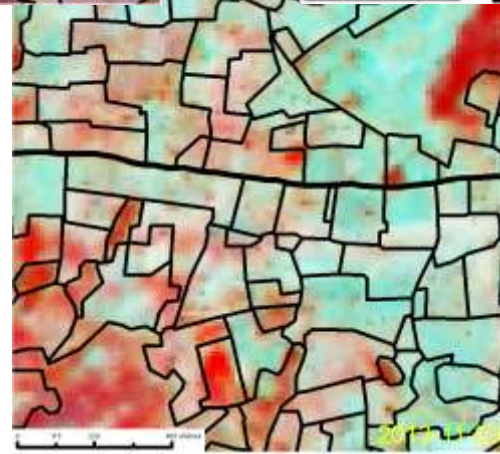
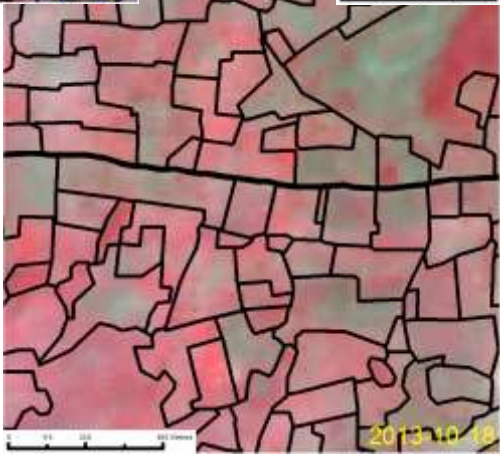
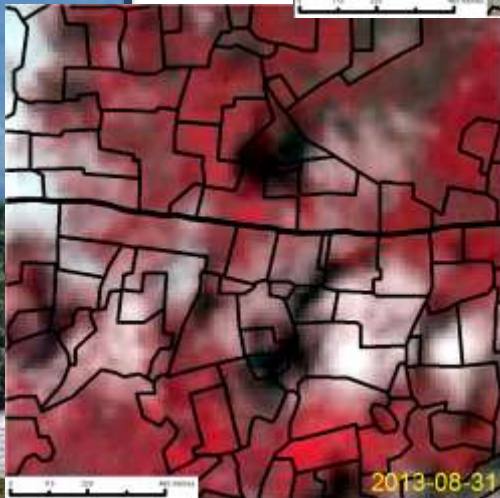
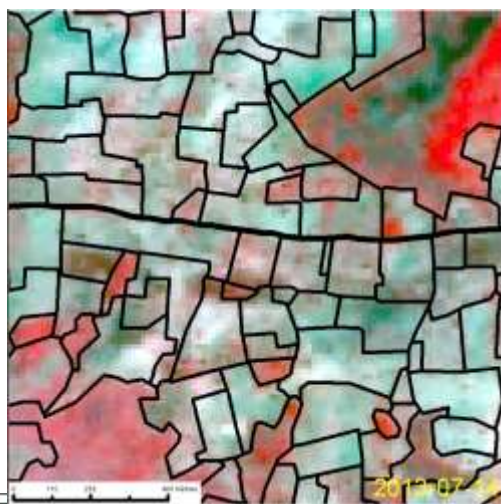
0 5 10 Km

JECAM

Joint Experiment for Crop Assessment and Monitoring

 **GROUP ON
EARTH OBSERVATIONS**

**Landsat 8
2013**

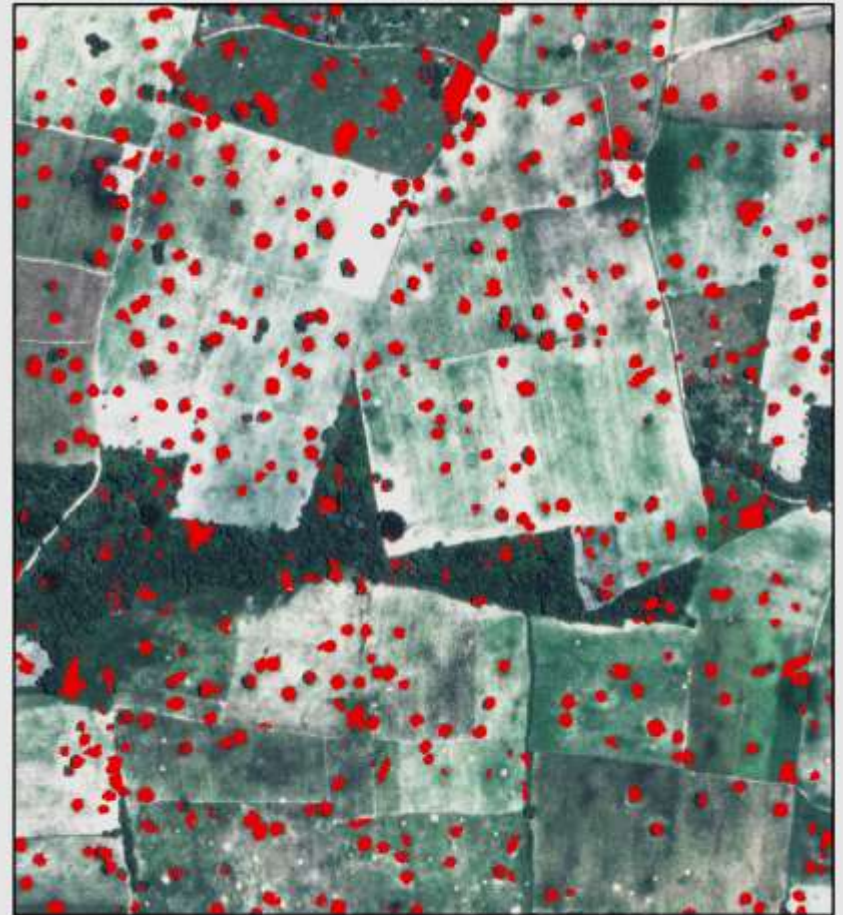


Results (1/2)

Tree extraction tests





Pléiades 2013/09/20



Pléiades 2013/09/20 and trees

Research Plans for Next Growing Season

 Will you hold the course, or modify the approach?
Improve the approach if time and money permit

 Do you anticipate ordering the same type/
quantity of EO data next year?

*Y (very high resolution image + HR time series
during the growth season to simulate S2)*

Radar images ??? TERRA-SAR X or COSMO SKYMED